

# Moving Forward with Renewables and Transmission in California: 2011 and Beyond



# Planning and Siting of Renewables

## Legislative and Policy Overview

- Loading Order - California Public Utilities Commission (CPUC) & Energy Commission (CEC)
  - renewable resources are second after efficiency investments
- Renewable Portfolio Standard (RPS) SB 1078 enacted in 2002 and amended by SB 107 in 2006
  - 20% of electricity resources to be renewable by 12/31/10
- Global Warming Solutions Act of 2006 (AB 32)
  - requires 30% reduction of greenhouse gases (e.g., CO<sub>2</sub>) by 2020



# Update of Renewables Legislative and Policy Overview

- 20% RPS requirement likely to be increased to 33% or more
- New Governor's directives - by 2020:
  - 12,000 megawatts (MW) of renewable distributed generation – photovoltaic (PV), wind, and others
  - 8,000 MW of central station renewables
  - 6,500 MW of combined heat and power



# California Large Scale Renewables Activity

- In 2010 CEC approved 9 solar thermal projects in four California counties - capacity total of 4,000 MW+ - all eligible for American Recovery & Reinvestment Act of 2009 (ARRA) cash grants
- 7 of 9 projects on federal land sites
- Permitting partnership and working relationships with US Bureau of Land Management (BLM) crucial
- State/federal agency Renewable Energy Action Team (REAT) - CEC, BLM, CA Dept. of Fish & Game, and US Fish & Wildlife Service meet weekly to expedite project permitting processes and resolve issues for thermal and non-thermal projects
- Numerous photovoltaic and wind projects continuing through local and federal permitting processes – REAT is monitoring



# Desert Solar Project Permitting Challenges

## Large project size exacerbates impacts

- Solar project sites covering thousands of acres for projects averaging approx. 350 MW
- Many in areas with minimal previous disturbance caused significant impacts on biological resources; mitigation choices complicated
- Presence of sensitive cultural resources in desert
- Complex water/surface drainage engineering issues
- Cumulative impacts – see next slide



# Desert Renewable Energy Conservation Plan

- Desert Renewable Energy Conservation Plan (DRECP) process created by Governor's Executive Order in 2008
- Intended to facilitate project review and consider cumulative impacts of multiple renewable energy projects in CA Mojave and Colorado desert areas
- Identifying desert areas best suited for energy development and those best suited for resource conservation
- State/federal REAT overseeing Plan development
- Key factor - Diverse stakeholder & local govt. involvement
- Plan will be both a Natural Communities Conservation Plan (NCCP) and part of one or more Habitat Conservation Plans (HCPs)
- DRECP due to be completed in 2012



# Transmission Needed for Renewables Interconnection in Southern California

- Numerous large solar projects proposed in desert with minimal transmission infrastructure and remote from local electricity demand centers
- California Independent System Operator (CAISO) and Southern California Edison (SCE) expedited transmission studies by 6 months
- Determined need for several major transmission network upgrades as well as additional telecommunication lines
- SCE now in BLM/CPUC permitting process for above upgrades and telecom lines
- Need to build lines quickly and avoid stranded investments





# Transmission Needed for Renewables Interconnection in Southern California (cont.)

- CAISO and SCE assessed the transmission requirements for “clusters” of generation projects in I-10 region in Riverside County, those proposed in Barstow region, and “north of Kramer” Junction in San Bernardino and Kern Counties
- California Public Utilities Commission (CPUC) permitting process for downstream transmission upgrades and new substations soon will be underway
- CAISO has received a waiver from FERC of interconnection deposit requirements
- CAISO assessing situations that allow allocation of “partial deliverability” as elements of transmission upgrades come into service
- Transmission owning utilities have filed Large Generator Interconnection Agreements (LGIA) at FERC for project developers with non-standard provisions for timely approval





# Transmission Next Steps to Enable Large Scale Renewables

- Energy Commission and CPUC will continue working closely with the California Transmission Planning Group (CTPG)
- CTPG a key public utility and investor owned utility coalition
  - Public entities: IID, TID, SMUD, LADWP
  - Investor owned: PG&E, SCE, SDG&E
- Other CTPG participants:
  - CA Independent System Operator (CAISO)
  - Western Area Power, Transmission Agency of Northern California (TANC), and Southern CA Public Power Assoc. (SCPPA)



# CTPG 2010 Statewide Transmission Plan

- CTPG 2010 Statewide Transmission Plan identified renewable transmission upgrades as potential options to reliably meet the state's 33% RPS by 2020
  - 26 High potential upgrades
    - Southern California: 23 and Northern California: 3
  - 34 Medium potential upgrades
    - Southern California: 17 and Northern California: 17
- Plan intended as key input for respective California Balancing Authority Areas' transmission planning processes
- Identified transmission corridors for future access to in-state and out-of-state renewable resources
  - Pacific Northwest
  - Northwest Nevada
  - Southwest



# CEC Corridor Planning Designation

- Designate and preserve corridor zones to meet long-term transmission infrastructure needs (PRC section 25331)
- Facilitate development of renewable generation
- Improve reliability of transmission system
- Streamline permitting and increase certainty of permitting outcomes
- Provide a link between transmission planning and permitting
- Involve local, state and federal governments, generators, other stakeholders, and the public in planning for transmission corridor zones
- Promote consistency of land use changes with future transmission line development



# Western States Regional Transmission Planning and Coordination Activity

- Western Electricity Coordinating Council (WECC): significant new direction in regional T-planning now
- Western states interconnection: major increase in attention/resources on region
- Regional Transmission Plan(s) to be adopted by WECC Board of Directors September 2011
- ARRA funding: US Dept. of Energy awarded \$26 million to Western Governors' Association (WGA) and WECC (creates 3 new regional entities, and supports state and non-govt. entity participation)
- 20 year plan required in 2013
- CAISO and CTPG have representatives on WECC's Transmission Expansion Planning & Policy Committee (TEPPC) responsible for producing the Plan(s)
- Key challenge: coordinating Western regional assumptions with CA policy and CTPG planning results



# FERC Notice of Proposed Rulemaking on Transmission Planning and Cost Allocation (RM10-23-000)

## **Energy Commission and CPUC filed joint initial comments on 9/22/10**

- Participation by independent and merchant transmission owners is essential
- Requirements should respect state jurisdiction and allow flexibility in developing planning agreements
- Early public participation in transmission planning is essential
- State and regional public policy requirements should be taken into account in a predictable manner while allowing for flexibility
- Undue discrimination against non-incumbent transmission developers should be avoided



# State of California Properties Renewable Project

- First focus: PV panels on state-building roof-tops to take advantage of rebates, California Environmental Quality Act (CEQA) categorical exemptions, and Rule 21 interconnection
- Second focus: Distributed renewables on disturbed/developed lands and surfaces to minimize environmental impacts & avoid major transmission upgrades
- Third Focus: Larger parcels of land: Caltrans highway interchanges, State Lands Commission lands, and Department of Water Resources surplus lands



# State Properties

## Regional Roof-Top on Buildings

### Sacramento area:

- 43 properties for 1.3 million useable roof-top/ parking space => 3 – 6 MW

### Total of Seven Regional areas:

- 172 properties for 6.5 million useable roof-top/ parking space => 15 – 30 MW

## Buildings with Potential to sell also into Wholesale Market

### Sacramento area:

- 1 property for 1.1 million useable roof-top/ parking space => 2.5 – 4.5 MW

### Total of Regional areas:

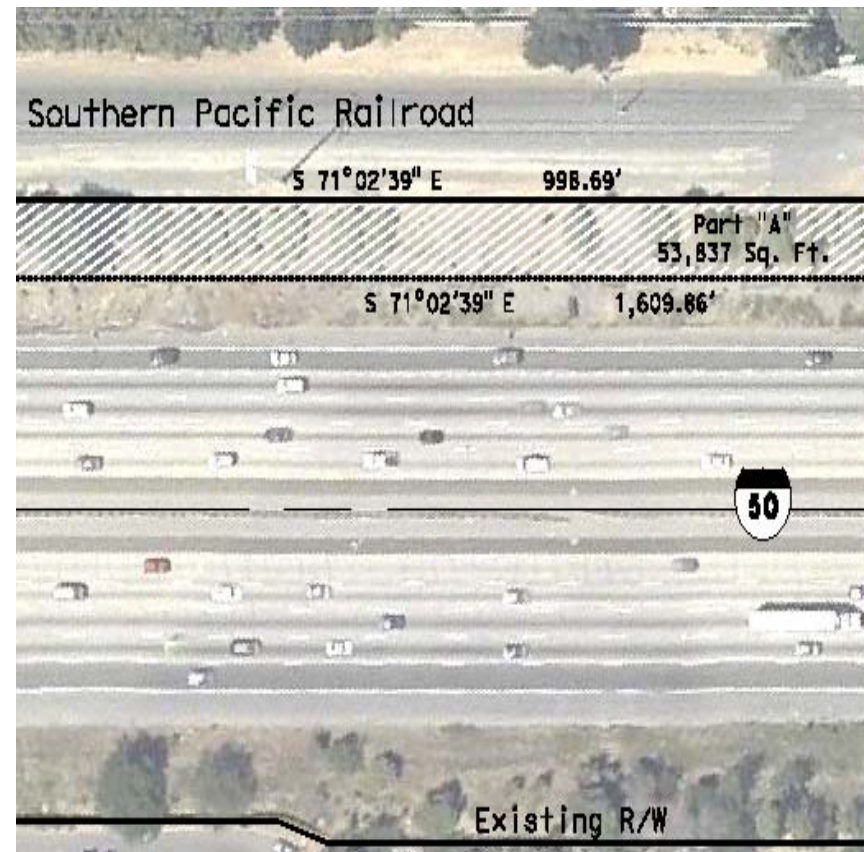
- 28 properties for 27 million useable roof-top/ parking space => 70 – 120 MW





# Lessons Learned: SMUD Photovoltaic Project in Caltrans ROW

- Used existing slope to reduce vehicle collisions and need for structure to maximize efficiency
- Construction access from rear of ROW
- SMUD assumes maintenance of panels thereby reducing Caltrans cost
- Need Federal Highway Administration buy-off of plan



Any Questions or Comments?



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